DOCUMENT RESUME

ED 143 909 CG 011 676

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TITLE A Program of Clinical Research Development: Developing Decision Making Skills in Children.
PUB DATE Apr 77
NOTE 19p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, N.Y., April 4-8, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Adjustment (to Environment); *Child Development; Counseling Effectiveness; *Counselor Role; *Decision Making Skills; Exceptional Child Research; Individual Needs; *Problem Solving; Program Development; Research Methodology; *Role Perception; Social Behavior

ABSTRACT

This paper emphasizes the seemingly incompatible roles of researcher (who focuses on reliable cause-effect relationships) and clinician (who endeavors to provide valid treatment to the client). As a counselor working with 9-13-year old dependent and neglected children, he is called on to fill both roles. This paper describes the creation of a program for teaching decision-making skills to children. Four phrases of the process are described: (1) developing training materials and assessment techniques; (2) using quasi-experimental design to obtain preliminary data; (3) using a rigorous experimental design to establish the effect of the training program on a larger group of children; and (4) reexamining the effects of treatment and looking for variables that might limit the effects of training. It is concluded that, despite the difficulties involved, the combined researcher-clinician role is of great value in the process of creating a treatment technique. (Author/BP)

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A Program of Clinical Research Development: Developing Decision Making Skills in Children[1]

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The counselor who enters the applied setting to examine and develop clinical techniques, acquires two seemingly incompatible roles. The counselor must blend the role of the researcher, who is focusing on reliable cause-effect relationships, with the role of the clinician who is endeavoring to provide valid treatment to the client. As a researcher, the counselor struggles to define and operationalize relevant independent variables to be investigated, while as a clinician, the counselor strives to capture the subtleties of the treatment under investigation. As a researcher, the counselor seeks reliable dependent measures yielding accurate observations, while as a clinician, the counselor attempts to identify measures that are valid relections of the effects of the treatment on the patient. As a researcher the counselor pursues a well-controlled investigation, while as a clinician the counselor is obligated to attend to the unpredictable day-to-day problems of the patient regardless of what they may be. Finally, as a researcher, the counselor examines the data with powerful statistical methods to determine the effects of the treatment across a large group of patients, while as a clinician, the counselor is concerned with the effects of the treatment on the individual patient.

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[1]Presented at the American Educational Research Association Annual Meeting in New York, New York, April 1977.

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Counselors have typically not embraced a blend of the role of researcher with that of the clinician; usually one perspective or the other has been adopted. The history of research in the clinical setting reflects this dichotomy. In the early half of the 20th century, the clinical "case study" approach was virtually the sole methodology used. Beginning in the late 1940's and early 1950's however, the emphasis began to shift to a focus on between-group methods to examine treatment effects over larger numbers of patients. Until the mid 1960's the counselor had been limited to these basic approaches for experimental investigations in the applied setting.

Within the last ten years, however, single-subject intensive design methodologies have become available that allow the counselor to blend the goals and demands of both the clinician and the researcher (see Hersen & Barlow, 1976; Yates, 1976). These newer methods yield reliable experimental data for the researcher and valid treatment data for the clinician.

As a direct result of the concern in these newer methodologies for blending the clinician and researcher perspectives, increased attention has been drawn to the process of conducting a series of investigations in the applied clinical setting (Lazarus & Bergen, 1971; Shapiro, 1966). This paper will describe how the interplay between clinical and experimental issues was a continual methodological concern in the development of a clinical treatment. As will be described, this treatment did not readily lend itself to the more common single-subject, intensive designs, since it did not afford the opportunity for reversal, withdrawal, nor multiple baseline procedures. Rather a succession of pilot, quasi-experimental, and experimental studies was required.

The purpose of this presentation is to indicate the methodology used in the process of developing an effective clinical treatment. A brief series of studies will be described that led to the creation of a program for teaching decision making skills to children. The studies reflect the concerns of the counselor as researcher-clinician at four different phases in the development process.

The Clinical Problem

The staff of Learning House, a behaviorally based group home in Palo Alto, California for acting out and neglected 9-13 year old children (Tobey & Thoresen, 1976), confronted the problem that many of the children in the home lacked basic skills in making sound decisions. In talks with the children about their past inappropriate behavior the children would make comments such as:

> "I knew it was wrong, but I wanted the money."
> "It was the first thing I thought to do."
> "I didn't know that (result) would happen."

It appeared that these children, when faced with a difficult problem situation, often adopted the initial solution that occurred to them without sufficiently considering alternative possibilities or their consequences.

This problem was viewed as a serious challenge to the staff. Although the child's behavior could be controlled through a progressive token economy system while in the home, the child's ability to make good decisions was crucial if the child was to successfully resolve future problems encountered in the home, school, and neighborhood after leaving the program.

While decision making was recognized as an important skill to be learned by the children in Learning House, it was also believed that other

children could benefit from training in this area. It was therefore decided to develop a program that would not only meet the needs of the children in the immediate clinical setting, but also would have the potential for wider application with all children of this age.

The Process of Treatment Development

Phase I of the treatment development began within an exhaustive review of the available literature on decision making training. Based on this review a behavioral self-management program was developed that taught a six-step decision making process. The steps in this process were: stating the problem, listing choices, indicating good and bad points for each choice, selecting one choice, and identifying a personal value supporting the choice. Written as a self-paced workbook with audiotape, the material used modeling, behavioral rehearsal, and cueing to teach decision making (Russell, 1976). The goal of this material was to teach the children to improve their skills in decision making by using each step of the process to solve a problem.

After the initial draft of the materials was designed, the program was presented to three children at Learning House and four children having no history of behavioral problems who were living with their natural families. In this initial stage, the children individually met with an adult to work through the materials. The children were interviewed for their comments and reactions to the design of the materials and the assessment methods used. The counselor sought information regarding the attractiveness of the training format for the children, the clarity of the descriptions, the appropriateness of the examples, and the thoroughness of the explanations and instructions. No attempt was made in this phase to perform rigorous evaluation.

In this initial phase the children were encouraged to collaborate with the counselor to examine the decision making materials for improvement. In all cases the children were eager to indicate the materials' short-comings. Based on the children's comments, the material was reviewed and revised.

Once the material and assessment methods had been stabilized, phase II of the development process was initiated. The second phase was designed to provide preliminary data on the effects of the material in the children's decision making abilities in a simulated problem situation.

A quasi-experimental design was selected to examine the pretest and posttest scores of a group of five new children who proceeded through the decision making materials. In this phase, the focus was on determining if posttest differences would be detected on behavioral measures of the children's ability to perform each step in the decision making process. In addition, a variety of observations were made of the children's daily lives to determine if the decision making skills were being implemented by the children.

From a research perspective, the second phase differed from the first phase in that the second phase controlled for several factors that were left uncontrolled in initial phase. All children received the same material and identical evaluation instruments. In addition, all children started and finished the material at the same time. In this way, the effects of maturation were minimized across children.

While not entirely satisfactory for the researcher, the second phase provided additional data regarding the treatment that added weight to the hypothesis that the decision making materials were effective. On one of five dependent measures that were examined, the children were able to offer 1.9 alternative solutions (in addition to their decision) for a simulated

problem on the pretest. On the posttest 3.4 additional alternative solutions were suggested. A t-test confirmed that this difference is significant at the $p < .05$ level.

Of particular interest during this phase, however, was the additional opportunity provided to the clinician for examining the individual child's response to the materials. The data for each child's pretest and posttest difference scores are presented in Figure 1. This data, together with self-report data from extended interviews with the children and observations of the children in situations requiring decision making abilities, added support to the assertion that the observed differences had clinical validity.

Insert Figure 1 About Here

With the evidence from Phase II that the material affected the children's abilities in a clinically and statistically significant way, the third phase of the investigation was initiated. The third phase was designed to provide a rigorously controlled experimental examination of the effects of the material on a larger group of children as compared with a no-treatment control group. In this phase, the classic two-group, pre-posttest design described by Campbell and Stanley (1963) experimentally controlled for the effects of testing, retesting, biased sampling, maturation, and history. This methodology met the demand of the researcher to provide support for a causal relationship between the material and the children's improved abilities.

Thirty-four, fourth grade children from a local elementary school were randomly assigned to two groups. After receiving a pretest of their abilities to use each of the steps in the decision making process in a simulated problem situation, one half of the children (experimental group) received four hours

of decision making training using the materials previously developed. The other half of the children served as a no-treatment control group. All children received a posttest when the decision making training had ended for the experimental group.

The pretest and posttest data for the means and standard deviations for the number of alternative solutions considered by the children are presented in Table 1. The observed differences were examined using ANCOVA and a

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Insert Table 1 About Here

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significant level of $p < .05$ was obtained (see Table 2). This form of

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Insert Table 2 About Here

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analysis is typically seen in journal articles and research reports as indicating that the treatment in question has been successful and, with perhaps a replication of the effects, should be adopted.

It is at this point that the traditional researcher often leaves the clinical setting to pursue other problems and issues. The materials had demonstrated their ability to improve the mean scores of those children who received the training. However, it was recognized that the statistical significance obtained for the experimental treatment was not sufficient to conclude that clinical validity had been attained and widespread implementation was therefore justifiable. Additional evaluative efforts were conducted, therefore, and the development process entered a fourth phase.

Attention was returned to the examination of the effects of the treatment on the individual child. These effects were reviewed in relation to the changes that were observed for the children in the control group.

Using the same dependent measure as before (i.e., the number of alternative solutions considered) the data for each child were plotted as pretest-posttest differences for each group (see Figure 2).

Insert Figure 2 About Here

This figure indicates the direction and degree of change for each child's posttest score based on the child's pretest score. To examine the effects of treatment on individual children the data were then organized to identify those children who obtained posttest scores that were greater than posttest scores obtained by the control group (see Figure 3).

Insert Figure 3 About Here

This procedure eliminated those children in the experimental group whose posttest scores did not exceed the scores obtained by the children in the control group. From a clinical perspective it can be seen that only 7 children in the experimental group can be identified as clearly benefiting from the decision making training. The data for all other children in the experimental group were not distinguishable from the data from those children in the control group.

The next step in this phase is to identify from clinical observations those variables that could possibly be affecting the children who showed no improvement greater than those children in the control group. Four major areas would need to be explored. The lack of improvement could be attributed to: (1) idiosyncracies unique to individual subjects (e.g., poor reading skills, transitory personal problems), (2) artifacts of the instructional setting (e.g., situational anxiety in the subject, concurrent disturbances in the classroom), (3) characteristics of the decision making materials (e.g., not enough examples, insufficient explanations), or (4) interactions among these factors.

The sifting of data in Phase IV to identify the variables affecting those children who did not improve continues the interplay begun in Phase I between experimental reliability and clinical validity for the treatment. Throughout the fourth phase the counselor continues to rely on clinical judgment to validate the experimental findings. Once the relevant variables have been hypothesized, the same experimental and quasi-experimental procedures suggested in Phase II and III would be used to confirm their effects.

The fourth phase of treatment development can continue indefinitely since the decision to terminate this last phase is a subjective one. The counselor's decision requires a combination of significant data obtained experimentally, and clinical judgment about treatment effects on individual clients. The fourth phase should continue until, from a clinical perspective, the treatment can demonstrate its effectiveness on at least 50% of the children who receive training. How many children should evidence improvement is, at this point, open for debate. It is important, however, for the counselor using this training program (or any other) in the clinical setting

to be aware of the data to support the probability of the treatment's effectiveness on the individual client and not simply rely on the effects of the treatment "on the average" for a group of clients.

Discussion

This series of studies was selected because it illustrates the interplay between clinical and experimental issues that arose in the process of developing a clinical treatment. Each of the four phases in this process had a clear goal (see Table 3).

Insert Table 3 About Here

Specific methods were selected to obtain experimental and clinical data that related to the goals of each phase. Using observations from the teaching situation and the children's self-report, Phase I developed the training materials and the assessment techniques. Phase II used quasi-experimental design with behavioral dependent measures to obtain preliminary data regarding the treatment's effects. In addition, observations were made of the children's use of the decision making steps in their day-to-day living activities, and a lengthy interview was conducted with each child. Phase III used a rigorous experimental design to establish the effect of the training program on a larger group of children. Finally, Phase IV reexamined the effects of the treatment on the individual child, and attempted to identify variables that might be limiting the effects of the training. The fourth phase was comprised of a series of individual and group studies that would continue until the training had been developed to the point of improving the abilities of at

least a majority of the children who received it.

It should be noted that a combination of methods was required in each phase of the process of creating a treatment technique. Each method obtained slightly different information about the treatment and its effects on the children. Each observation added a bit more support for the rejection of the null hypothesis.

Unfortunately, few guidelines are available to aid the researcher-clinician in proceeding through this developmental process. The counselor must rely on judgment based on clinical experience and methodological sophistication to select an appropriate methodology to answer the question under investigation. The selection of methodology must be made from a variety of legitimate experimental, quasi-experimental, and intensive designs. There is no single method nor series of methods that are appropriate in all cases. Similarly there is no single sequence of phases in the developmental process that will satisfy the concerns of both the researcher and the clinician in all cases. It is clear, however, that the counselor desiring to create treatments appropriate for use in the applied setting must adopt the combined role of the researcher-clinician and attend to both the experimental rigor required by the researcher and the clinical validity demanded by the clinician.

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Table 1

Pretest and Posttest Means and Standard Deviations
for Alternative Solutions (Phase III)

		Decision Making Training		No Treatment Control	
		Pre	Post	Pre	Post
Number of Alternative Solutions	mean	.65	1.38	.41	.35
	s.d.	(.51)	(.43)	(.43)	(.45)

Table 2

ANCOVA for Alternative Solutions (Phase III)

Source	d.f.	MS	F
among	1	7.44	18.35*
within	31	.41	

* sig. $p < .01$

Table 3

Four Phase Development Process

Phase	Perspective	Goal	Methodology	Data
I	experimental	1. Identify techniques	literature review	------
	clinical	1. Develop materials	--------	------
		2. Elicit S reactions	interview	subjective report
		3. Observe training	observation	behavioral
II	experimental	1. Preliminary effects on group	quasi-experimental	behavioral
	clinical	1. Elicit S reactions	interview	subjective report
		2. Observe training	observation	behavioral
		3. Effects outside training	observation	anecdotal reports
III	experimental	1. Effects on group	experiments	behavioral
	clinical	1. Effect on individual S	data analysis	behavioral
		2. Observe training	observation	behavioral
IV	experimental	1. Experimental data	experimental; quasi-experimental	behavioral
	clinical	1. Elicit S reactions	interview	subjective report
		2. Observe training	observation	behavioral
		3. Effects outside training	observation	anecdotal reports

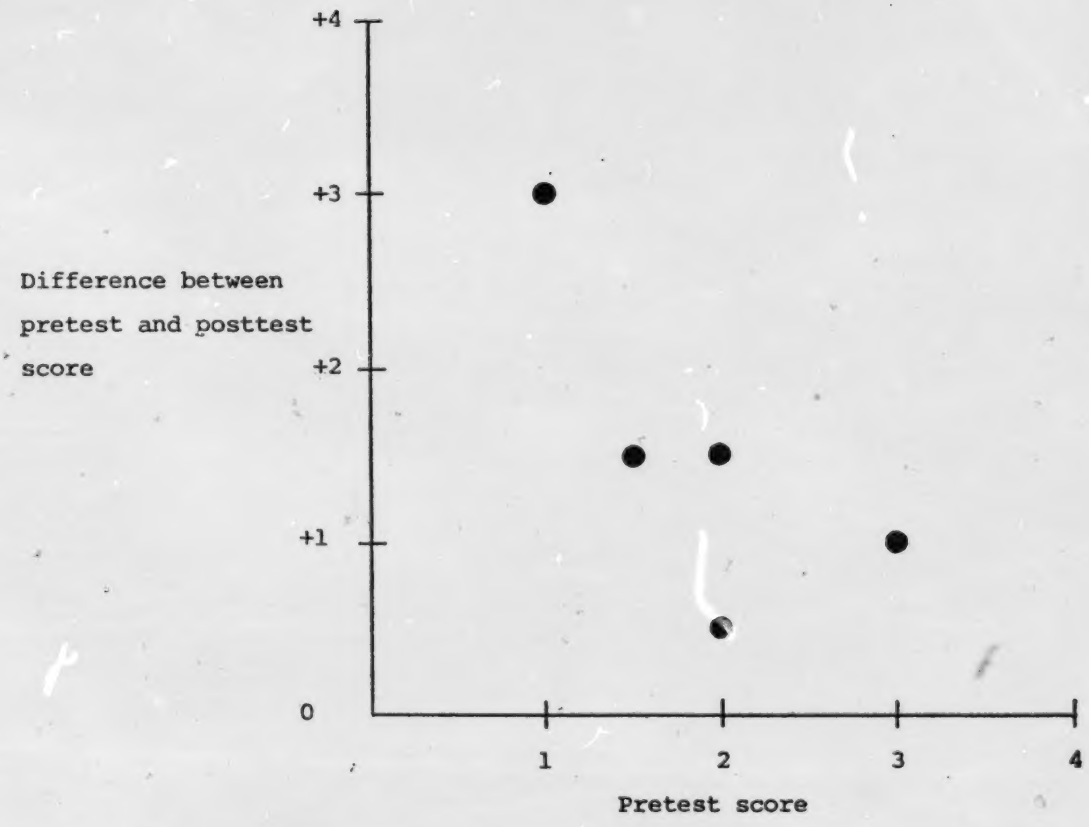

Figure 1. Pretest Posttest Difference Scores Plotted on Pretest Score (Phase I)

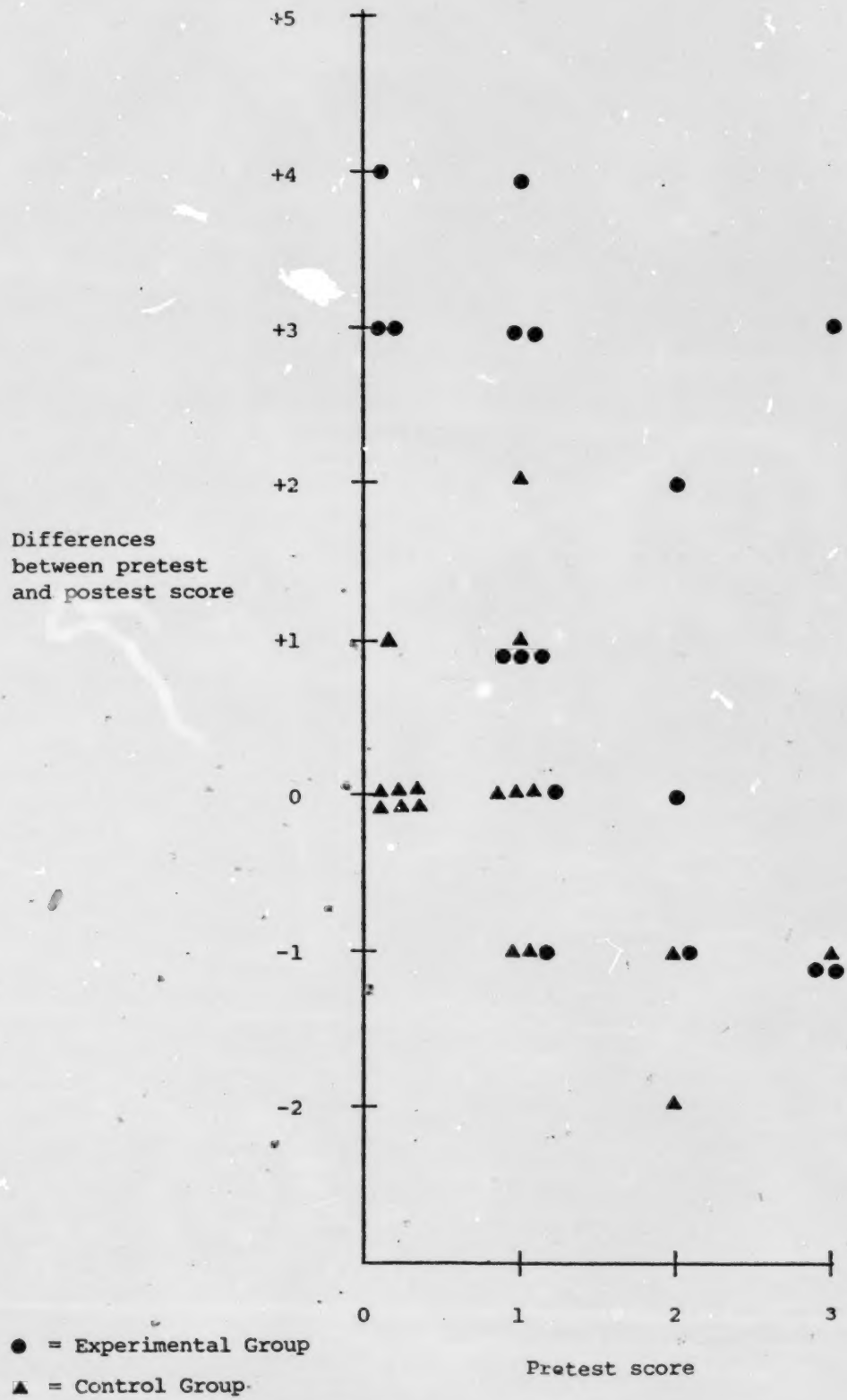

Fig. 2. Pretest-Posttest Difference Scores Plotted on Pretest Score (Phase III)

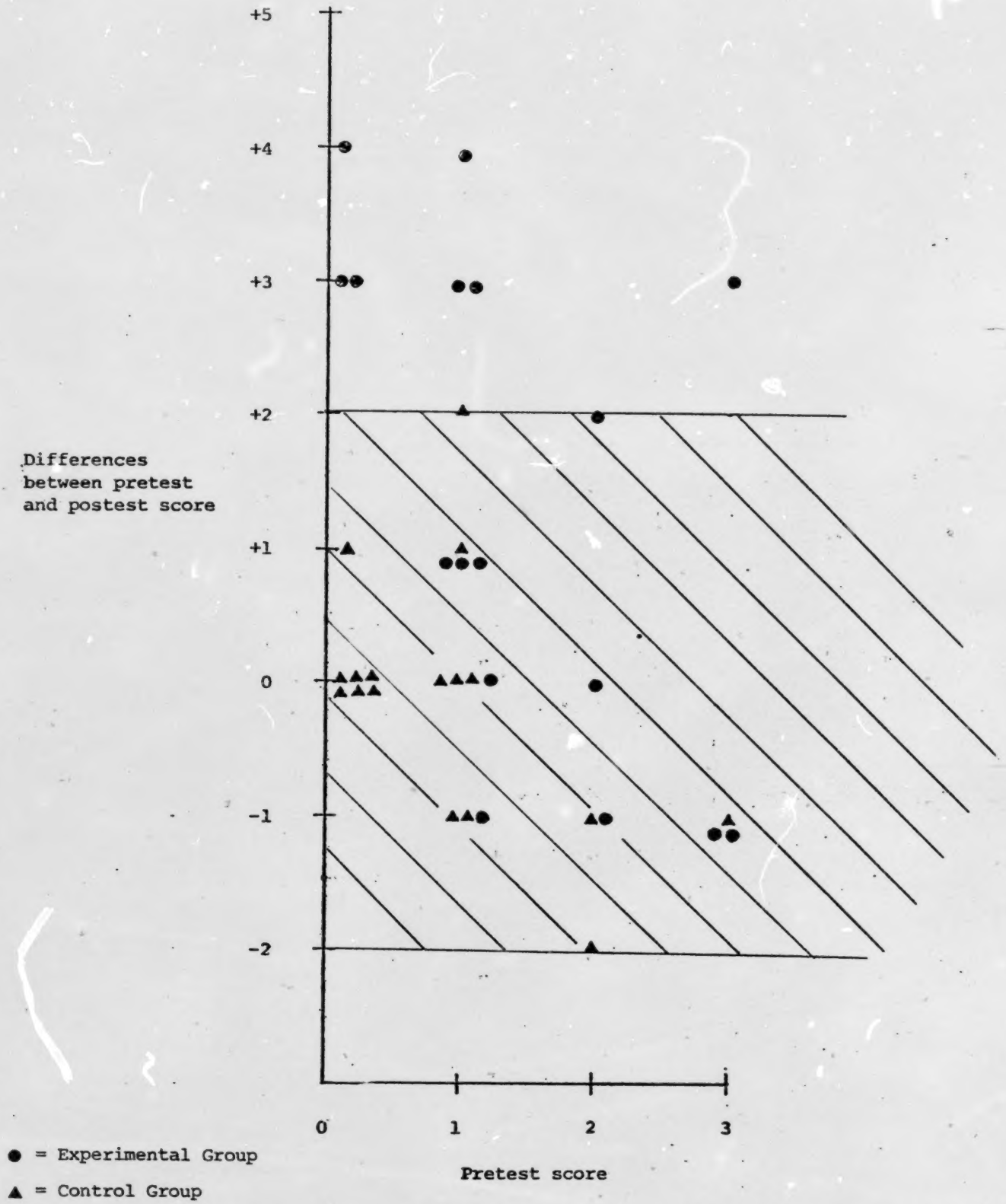

Fig. 3. Pretest-Posttest Difference Scores Plotted on Pretest Score with Control Group Scores highlighted (Phase III)